If you are using a printed copy of this procedure, and not the on-screen version, then you <u>MUST</u> make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A

C-A OPERATIONS PROCEDURES MANUAL

ATTACHMENT

4.120.8.e 8 O'Clock (PEER 17) Mode 24 Tests

C-A-OPM Procedures in which this Attachment is used.		
4.120.8		

<u>Hand Processed Changes</u>

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>

Approved: ***<u>Signature on File</u>*** _____
Collider-Accelerator Department Chairman Date

V. Castillo

4.120.8.e 8 O'Clock (PEER 17) Mode 24 Tests

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:_____ Checksum: _____

Division B Software Filename and Checksum: Title:_____ Checksum: _____

Initial testing complete:

Test Team Leader's Name (Print): _____ Life Number: _____

Test Team Leader's Name (Sign): _____ Date: _____/____/_____

Acceptance test procedure complete (following repairs and retesting if required):

Test Team Leader's Name (Print): _____ Life Number:_____

Test Team Leader's Name (Sign): _____ Date: _____/____/_____

Test results reviewed by:

Safety Section Head's Name (Print):_____ Life Number: _____

Safety Section Head's Name (Sign):_____ Date: _____/____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____ Life Number: _____

RSC Member's Name (Sign):_____ Date: _____/____/_____

1.1 Verify necessary conditions for Mode 24

	SET	**CD Key switch for**	**XY ARCS**
□	**VERIFY**	**CD Key switch for**	**XY ARCS**
	PLACE	**Peer 17** in **Mode 16**	
□	**VERIFY**	**Peer 17** is in **Controlled Access**	**MODE 16**
	CLOSE	**Peer 17 gates:** Plug door, 9GS1	
	RESET	**Peer 17 gates:** 7GS1, 7EL1, 7GE1, 7MD1, 8GE1, 8GE2, 8MD1, 8EL1, 8ED1and 8ED2	
□	**VERIFY**	**Peer 17 gates:** □ 7GS1, □ 7EL1, □ 7GE1, □ 7MD1, □ 8GE1, □ 8GE2, □ 8MD1, □ 8EL1, □ 8ED1 and □ 8ED2 are	**RESET**
	SWEEP	**Peer 17 Zones:** 7Z1, 8Z1, 8Z2	
□	**VERIFY**	**Peer 17 Zones:** □ 7Z1, □ 8Z1, □ 8Z2 are	**SWEPT**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**Peer 17** is in **No Access**	**MODE 24**
	RECORD	**Duration [_____ secs]** of **Beam Imminent Alarm**	
□	**VERIFY**	**Red No Access Light** at Gate **8GE1**	**ON**
	PLACE	**Peer 17** in **Mode 16**	
□	**VERIFY**	**Peer 17** is in **Controlled Access**	**MODE 16**
	REMOVE	**Reset** from gate **8GE1**	
□	**VERIFY**	**MCR** sees gate **8GE1** is	**NOT RESET**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**Attempt** to place **Peer 17** in **No Access Mode**	**FAIL**
	RESET	Gate **8GE1**	
□	**VERIFY**	**MCR** sees gate **8GE1**	**RESET**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	PLACE	**Peer 17** in **Mode 16**	
□	**VERIFY**	**Peer 17** is in **Controlled Access**	**MODE 16**
	REMOVE	**Sweep** from zone **7Z1**	
□	**VERIFY**	**MCR** sees zone **7Z1** is	**NOT SWEPT**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**Attempt** to place **Peer 17** in **No Access Mode**	**FAIL**
	SWEEP	Zone **7Z1**	
□	**VERIFY**	**MCR** sees zone **7Z1**	**SWEPT**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	PLACE	**Peer 17** in **Mode 16**	
□	**VERIFY**	**Peer 17** is in **Controlled Access**	**MODE 16**

□ **Check for test acceptance of Verify necessary conditions for Mode 24**

1.2 Verify System Response to Opening a Gate while in Mode 24

□	**VERIFY**	**CD Key switch for**	**XY ARCS**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
□	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
	SET	**RHIC Primary BS withdraw command**	**OUT**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
	FOLLOW	**Test schedule in Table 1, below**	

Open gate	Verify Peer 17 go to Mode 2	Verify sweep lost	Verify RHIC ring inh ON	Verify Peer 17 Permit Link is disabled	Verify RHIC Inj. Inh ON	Place Peer 17 in Mode 24 & alarm stop	Set RHIC prmy BS w/draw cmd OUT	Verify RHIC ring inh OFF	Verify Peer 17 Permit Link is enabled	Verify RHIC Inj. Inh OFF	Goto next gate
7MD1	□	□	□	□	□		□		□	□	
8GE1	□	□	□	□	□		□		□	□	
8GE2	□	□	□	□	□		□		□	□	**End of test**

Table 1- Test of Gates in Mode 24

□ **Check for test acceptance of System Response to Opening a Gate while in Mode 24**

1.3 Verify Entry gates are securely locked in Mode 24

	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	OPEN	Gate **7GE1** with **#14 Key** and **Simultaneous Release**	
□	**VERIFY**	Attempt to open gate **7GE1** with **#14 Key** and **Simultaneous Release**	**FAIL**
	OPEN	Gate **7GE1** with **Blue Card**	
□	**VERIFY**	Attempt to open gate **7GE1** with **Blue Card**	**FAIL**

□ **Check for test acceptance of Verify Entry gates are securely locked in Mode 24**

1.4 Verify System Response to Pulling a Crash Cord while in Mode 24

Test in Zone 7Z1

☐	**VERIFY**	**CD Key switch for**	**XY ARCS**
	PLACE	**Peer 17** in **Mode 24**	
☐	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	SET	**RHIC Primary Beam Stop Withdraw command**	**OUT**
☐	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
☐	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
☐	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
☐	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**
	PULL	Any **Zone 7Z1 crash cord [System #: _____]**	
☐	**VERIFY**	**Peer 17** goes to	**MODE 2**
☐	**VERIFY**	**Sweep** is	**LOST**
☐	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
☐	**VERIFY**	**MCR** sees **RHIC Permit Link**	**DISABLED**
☐	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**ON**
☐	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**ON**
	REARM	**Crash device**	
	RESET	**Crash at MCR**	
☐	**VERIFY**	**Crash is**	**RESET**
	PLACE	**Peer 17** in **Mode 24**	
☐	**VERIFY**	**Peer 17** is in **Beam Imminent Mode**	**MODE 24**
	PULL	Any **Zone 7Z1 crash cord [System #: _____]** when alarm starts sounding	
☐	**VERIFY**	**Beam Imminent alarm**	**STOPS**
☐	**VERIFY**	**Peer 17** has moved to	**MODE 2**
☐	**VERIFY**	**MCR** sees **Zone 7Z1**	**CRASHED**
	PLACE	**Peer 17** in **Mode 8** (Restricted Access)	
☐	**VERIFY**	**Attempt** to go to **Mode 8**	**FAIL**
	REARM	**Crash device**	
	RESET	**Crash at MCR**	
☐	**VERIFY**	**Crash is**	**RESET**
	PLACE	**Peer 17** in **Mode 8**	
☐	**VERIFY**	**MCR** sees **Peer 17** in **Restricted Access**	**MODE 8**

Test in Zone 8Z1

	PLACE	**Peer 17** in **Mode 24**	
☐	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	SET	**RHIC Primary Beam Stop Withdraw command**	**OUT**

□	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**
	PULL	Any **Zone 8Z1 crash cord [System #: _____]**	
□	**VERIFY**	**Peer 17** goes to	**MODE 2**
□	**VERIFY**	**Sweep** is	**LOST**
□	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**ON**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**ON**
	REARM	**Crash device**	
	RESET	**Crash at MCR**	
□	**VERIFY**	**Crash is**	**RESET**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**Peer 17** is in **Beam Imminent Mode**	**MODE 24**
	PULL	Any **Zone 8Z1 crash cord [System #: _____]** when **alarm starts sounding**	
□	**VERIFY**	**Beam Imminent alarm**	**STOPS**
□	**VERIFY**	**Peer 17** has moved to	**MODE 2**
□	**VERIFY**	**MCR** sees **Zone 8Z1**	**CRASHED**
	PLACE	**Peer 17** in **Mode 8** (Restricted Access)	
□	**VERIFY**	**Attempt** to go to **Mode 8**	**FAIL**
	REARM	**Crash device**	
	RESET	**Crash at MCR**	
□	**VERIFY**	**Crash is**	**RESET**
	PLACE	**Peer 17** in **Mode 8**	
□	**VERIFY**	**MCR** sees **Peer 17** in **Restricted Access**	**MODE 8**
	Test in Zone 8Z2		
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	SET	**RHIC Primary Beam Stop Withdraw command**	**OUT**
□	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**
	PULL	Any **Zone 8Z2 crash cord [System #: _____]**	
□	**VERIFY**	**Peer 17** goes to	**MODE 2**
□	**VERIFY**	**Sweep** is	**LOST**

□	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**ON**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**ON**
	REARM	**Crash device**	
	RESET	**Crash at MCR**	
□	**VERIFY**	**Crash is**	**RESET**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**Peer 17** is in **Beam Imminent Mode**	**MODE 24**
	PULL	Any **Zone 8Z2 crash cord [System #: _____]** when **alarm starts sounding**	
□	**VERIFY**	**Beam Imminent alarm**	**STOPS**
□	**VERIFY**	**Peer 17** has moved to	**MODE 2**
□	**VERIFY**	**MCR** sees **Zone 8Z2**	**CRASHED**
	PLACE	**Peer 17** in **Mode 8** (Restricted Access)	
□	**VERIFY**	**Attempt** to go to **Mode 8**	**FAIL**
	REARM	**Crash device**	
	RESET	**Crash at MCR**	
□	**VERIFY**	**Crash is**	**RESET**
	PLACE	**Peer 17** in **Mode 8**	
□	**VERIFY**	**MCR** sees **Peer 17** in **Restricted Access**	**MODE 8**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	SET	**RHIC Primary Beam Stop Withdraw command**	**OUT**
□	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**

□ **Check for test acceptance of Verify System Response to Pulling a Crash Cord while in Mode 24**

1.5 Verify System Response to ODH trip while in Mode 24

	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 7** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	SET	**RHIC Primary Beam Stop Withdraw command**	**OUT**
□	**VERIFY**	**MCR** sees **RHIC Injection CD** on CD pg	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**
	TRIP	**ODH sensor** using test button, following **Table 2,** below	

ODH sensor	Trip sen-sor	Verify peer 17 stays in Mode 24	Verify BS with-draw cmd OUT	Verify Rhic ring inh OFF	Verify Permit link is enabled	Verify Rhic Inj. Inh OFF	Verify strobe on	Verify son-alert on	Verify fans & vents off	Go to next test
7AS1/A		□	□	□	□	□	□	□	□	
7AS1/B		□	□	□	□	□	□	□	□	Next ODH
8AS1/A		□	□	□	□	□	□	□	□	
8AS1/B		□	□	□	□	□	□	□	□	Next ODH
8AS4/A		□	□	□	□	□	□	□	□	
8AS4/B		□	□	□	□	□	□	□	□	End of test

Table 2 – Test of ODH sensors in Mode 24

□ **Check for test acceptance of Verify System Response to ODH trip while in Mode 24**

1.6 Test Emergency fan ON/OFF controls at 7GE1 in Mode 24

	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	PRESS	Emergency fan **ON** button at gate **7GE1**	
	WAIT	For **90 sec** timeout counter	
□	**VERIFY**	Fan **7EF2** is	**ON**
□	**VERIFY**	Fan **7EF3** is	**ON**
□	**VERIFY**	Vent **7AV1** is	**OPEN**
□	**VERIFY**	Vent **7AV2** is	**OPEN**
□	**VERIFY**	Vent **7AV3** is	**OPEN**
□	**VERIFY**	Vent **7AV4** is	**OPEN**
□	**VERIFY**	Vent **7AV5** is	**OPEN**
	PRESS	Emergency fan **OFF** button at gate **7GE1**	
	WAIT	For **90 sec** timeout counter	
□	**VERIFY**	Fan **7EF2** is	**OFF**
□	**VERIFY**	Fan **7EF3** is	**OFF**
□	**VERIFY**	Vent **7AV1** is	**CLOSED**
□	**VERIFY**	Vent **7AV2** is	**CLOSED**
□	**VERIFY**	Vent **7AV3** is	**CLOSED**
□	**VERIFY**	Vent **7AV4** is	**CLOSED**
□	**VERIFY**	Vent **7AV5** is	**CLOSED**

□ **Check for acceptance of Test of Emergency fan ON/OFF controls at 7GE1 in Mode 24**

1.7 Test MCR reset of Emergency ON/OFF at 7GE1 in Mode 24

□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	PRESS	Emergency fan **ON** button at gate **7GE1**	
	WAIT	For **90 sec** timeout counter	
□	**VERIFY**	Fan **7EF2** is	**ON**
□	**VERIFY**	Fan **7EF3** is	**ON**
□	**VERIFY**	Vent **7AV1** is	**OPEN**
□	**VERIFY**	Vent **7AV2** is	**OPEN**
□	**VERIFY**	Vent **7AV3** is	**OPEN**
□	**VERIFY**	Vent **7AV4** is	**OPEN**
□	**VERIFY**	Vent **7AV5** is	**OPEN**
	PRESS	Emergency fan **OFF** button at **MCR**	
	WAIT	For **90 sec** timeout counter	
□	**VERIFY**	Fan **7EF2** is	**OFF**
□	**VERIFY**	Fan **7EF3** is	**OFF**
□	**VERIFY**	Vent **7AV1** is	**CLOSED**
□	**VERIFY**	Vent **7AV2** is	**CLOSED**
□	**VERIFY**	Vent **7AV3** is	**CLOSED**
□	**VERIFY**	Vent **7AV4** is	**CLOSED**
□	**VERIFY**	Vent **7AV5** is	**CLOSED**

□ **Check for acceptance of Test of MCR reset of Emergency fan ON/OFF controls at 7GE1 in Mode 24**

1.8 Test Emergency fan ON/OFF controls at 8GE2 in Mode 24

	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	PRESS	Emergency fan **ON** button at gate **8GE2**	
	WAIT	For **90 sec** timeout counter	
□	**VERIFY**	Fan **8EF0** is	**ON**
□	**VERIFY**	Fan **8EF1** is	**ON**
□	**VERIFY**	Fan **9EF1** is	**ON**
□	**VERIFY**	Vent **8AV0** is	**OPEN**
□	**VERIFY**	Vent **8AV1** is	**OPEN**
□	**VERIFY**	Vent **8AV2** is	**OPEN**
□	**VERIFY**	Vent **8AV3** is	**OPEN**
□	**VERIFY**	Vent **8AV4** is	**OPEN**
□	**VERIFY**	Vent **9AV1** is	**OPEN**
	PRESS	Emergency fan **OFF** button at gate **8GE2**	
	WAIT	For **90 sec** timeout counter	
□	**VERIFY**	Fan **8EF0** is	**OFF**
□	**VERIFY**	Fan **8EF1** is	**OFF**
□	**VERIFY**	Fan **9EF1** is	**OFF**
□	**VERIFY**	Vent **8AV0** is	**CLOSED**
□	**VERIFY**	Vent **8AV1** is	**CLOSED**
□	**VERIFY**	Vent **8AV2** is	**CLOSED**
□	**VERIFY**	Vent **8AV3** is	**CLOSED**
□	**VERIFY**	Vent **8AV4** is	**CLOSED**
□	**VERIFY**	Vent **9AV1** is	**CLOSED**

□ **Check for acceptance of Test of Emergency fan ON/OFF controls at 8GE2 in Mode 24**

1.9 Test MCR reset of Emergency ON/OFF at 8GE2 in Mode 24

☐	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	PRESS	Emergency fan **ON** button at gate **8GE2**	
	WAIT	For **90 sec** timeout counter	
☐	**VERIFY**	Fan **8EF0** is	**ON**
☐	**VERIFY**	Fan **8EF1** is	**ON**
☐	**VERIFY**	Fan **9EF1** is	**ON**
☐	**VERIFY**	Vent **8AV0** is	**OPEN**
☐	**VERIFY**	Vent **8AV1** is	**OPEN**
☐	**VERIFY**	Vent **8AV2** is	**OPEN**
☐	**VERIFY**	Vent **8AV3** is	**OPEN**
☐	**VERIFY**	Vent **8AV4** is	**OPEN**
☐	**VERIFY**	Vent **9AV1** is	**OPEN**
	PRESS	Emergency fan **OFF** button at **MCR**	
	WAIT	For **90 sec** timeout counter	
☐	**VERIFY**	Fan **8EF0** is	**OFF**
☐	**VERIFY**	Fan **8EF1** is	**OFF**
☐	**VERIFY**	Fan **9EF1** is	**OFF**
☐	**VERIFY**	Vent **8AV0** is	**CLOSED**
☐	**VERIFY**	Vent **8AV1** is	**CLOSED**
☐	**VERIFY**	Vent **8AV2** is	**CLOSED**
☐	**VERIFY**	Vent **8AV3** is	**CLOSED**
☐	**VERIFY**	Vent **8AV4** is	**CLOSED**
☐	**VERIFY**	Vent **9AV1** is	**CLOSED**

☐ **Check for acceptance of Test of MCR reset of Emergency fan ON/OFF controls at 8GE2 in Mode 24**

1.10 Test local fan controls in service building 1008B Mode 24

☐	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	PRESS	Fan **ON** button at fan box	
☐	**VERIFY**	**1008B fan** is	**ON**
☐	**VERIFY**	**1008B vent** is	**OPENED**
	TURN OFF	**1008B fan** using **MCR Fan OFF button**	
☐	**VERIFY**	Attempt to turn off **1008B fan** using **MCR Fan OFF button**	**FAIL**
	PRESS	Fan **OFF** button at fan box	
☐	**VERIFY**	**1008B fan** is	**OFF**
☐	**VERIFY**	**1008B vent** is	**CLOSED**

☐ **Check for acceptance of Test local fan controls in service building 1008B Mode 24**

1.11 Test Division A loss of Remote I/O in Mode 24

□	**VERIFY**	CD Key switch is **set for**	**XY ARCS**
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	SET	**RHIC Primary Beam Stop Withdraw command**	**OUT**
□	**VERIFY**	**MCR** sees **RHIC Injection CD** on CD pg	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**
	UNPLUG	Remote **I/O** cable from **Scanner module** in **Peer 17A**	
□	**VERIFY**	**MCR** sees **Peer 17 Div A CD RIO** on H/W pg	**FAULT**
□	**VERIFY**	**MCR** sees **Peer 17 Div A** go to	**MODE 2**
□	**VERIFY**	**MCR** sees **RHIC Injection CD** on CD pg	**DISABLED**
□	**VERIFY**	**MCR** sees **Div A RHIC Permit Link**	**DISABLED**
□	**VERIFY**	**MCR** sees **Div A RHIC Injection inhibit**	**ON**
□	**VERIFY**	**MCR** sees **Div A RHIC ring inhibit**	**ON**
□	**VERIFY**	**MCR** sees **Div A RHIC Injn rhbk latch**	**ON**
□	**VERIFY**	**MCR** sees **Div A RHIC rhbk latch**	**ON**
□	**VERIFY**	**MCR** sees on CD pg **W**	**REACHBACK**
□	**VERIFY**	**MCR** sees on CD pg **RHIC**	**REACHBACK**
□	**VERIFY**	**MCR** sees on CD pg **BS G3**	**IN**
	REPLACE	Remote **I/O** cable at **Scanner module** in **Peer 17A**	
	RESET	**NG CRIT I/O** condition at **MCR**	
□	**VERIFY**	**MCR** sees **CD RIO**	**OK**
	PLACE	**Peer 17** in **Mode 2**	
□	**VERIFY**	**MCR** sees **Peer 17** in **Safe Access**	**MODE 2**
	PLACE	**Peer 17** in **Mode 16**	
□	**VERIFY**	**MCR** sees **Peer 17** in **Controlled Access**	**MODE 16**

□ **Check for test acceptance of Division A loss of Remote I/O in Mode 24**

1.12 Test Division B loss of Remote I/O in Mode 24

□	**VERIFY**	CD Key switch is **set for**	**XY ARCS**
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	SET	**RHIC Primary Beam Stop Withdraw command**	**OUT**
□	**VERIFY**	**MCR** sees **RHIC Injection CD** on CD pg	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**
	UNPLUG	Remote **I/O** cable from **Scanner module** in **Peer 7B**	
□	**VERIFY**	**MCR** sees **Peer 17 Div B CD RIO** on H/W pg	**FAULT**
□	**VERIFY**	**MCR** sees **Peer 17 Div B** go to	**MODE 2**
□	**VERIFY**	**MCR** sees **RHIC Injection CD** on CD pg	**DISABLED**
□	**VERIFY**	**MCR** sees **Div B RHIC Permit Link**	**DISABLED**
□	**VERIFY**	**MCR** sees **Div B RHIC Injection inhibit**	**ON**
□	**VERIFY**	**MCR** sees **Div B RHIC ring inhibit**	**ON**
□	**VERIFY**	**MCR** sees **Div B RHIC Injn rhbk latch**	**ON**
□	**VERIFY**	**MCR** sees **Div B RHIC rhbk latch**	**ON**
□	**VERIFY**	**MCR** sees on CD pg **W**	**REACHBACK**
□	**VERIFY**	**MCR** sees on CD pg **RHIC**	**REACHBACK**
□	**VERIFY**	**MCR** sees on CD pg **BS G3**	**IN**
	REPLACE	Remote **I/O** cable at **Scanner module** in **Peer 7B**	
	RESET	**NG CRIT I/O** condition at **MCR**	
□	**VERIFY**	**MCR** sees **CD RIO**	**OK**
	PLACE	**Peer 17** in **Mode 2**	
□	**VERIFY**	**MCR** sees **Peer 17** in **Safe Access**	**MODE 2**
	PLACE	**Peer 17** in **Mode 16**	
□	**VERIFY**	**MCR** sees **Peer 17** in **Controlled Access**	**MODE 16**

□ **Check for test acceptance of Division B loss of Remote I/O in Mode 24**

1.13 Sweep tests in Mode 24

	CLOSE	**Peer 17 gates:** Plug door, 9GS1	
	RESET	**Peer 17 gates:** 7GS1, 7EL1, 7GE1, 7MD1, 8GE1, 8GE2, 8MD1, 8EL1, 8ED1and 8ED2	
□	**VERIFY**	**Peer 17 gates:** □ 7GS1, □ 7EL1, □ 7GE1, □ 7MD1, □ 8GE1, □ 8GE2, □ 8MD1, □ 8EL1, □ 8ED1 and □ 8ED2 are	**RESET**
	SWEEP	**Peer 17 Zones:** 7Z1, 8Z1, 8Z2	
□	**VERIFY**	**Peer 17 Zones:** □ 7Z1, □ 8Z1, □ 8Z2 are	**SWEPT**
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**Peer 17** is in **No Access**	**MODE 24**
	PLACE	**Peer 17** in **Mode 16**	
□	**VERIFY**	**Peer 17** is in **Controlled Access**	**MODE 16**
	FOLLOW	**Test Schedule in Table 3, below**	

Zone	Gate	Open gate	Verify sweep lost	Verify cannot sweep with gate open	Close gate	Force sweep	Verify cannot go to Mode 24	Reset gate	Verify can go to Mode 24	Go to Mode 16 & next gate
7Z1	**7GE1**		□	□			□		□	
8Z1	**8GE1**		□	□			□		□	
8Z2	**8GE2**		□	□			□		□	

Table 3 – Sweep tests in Mode 24

□ **Check for test acceptance of Sweep tests in Mode 24**

1.14 Chipmunk Tests in Mode 24

□	**VERIFY**	**CD Key switch for**	**XY ARCS**
	ATTACH	**Test Box** to **Chipmunk** prior to test	
	PLACE	**Peer 17** in **Mode 24**	
□	**VERIFY**	**MCR** sees **Peer 17** in **No Access**	**MODE 24**
	WAIT	For **Beam Imminent Alarm** to stop sounding	
	SET	**RHIC Primary Beam Stop Withdraw command**	**OUT**
□	**VERIFY**	**MCR** sees **RHIC Injection CD**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Injection inhibit**	**OFF**
□	**VERIFY**	**MCR** sees **RHIC ring inhibit**	**OFF**

C'munk	Press & verify div A trip	Verify peer 17 stays in mode 24	Verify div A Rhic ring inh ON	Verify div A Rhic permit link disabled	Verify div A Rhic Inj. Inh ON	Reset all Systems & cycle BS cmd to OUT	Verify div A Rhic ring inh OFF	Verify div A Rhic permit link enabled	Verify div A Rhic Inj. Inh OFF	Goto table 5 for div B trip
C112		□	□	□	□		□	□	□	
C113		□	□	□	□		□	□	□	
C114		□	□	□	□		□	□	□	

Table 4 – Division A trip test in Mode 24

C'munk	Press & verify div B trip	Verify peer 17 stays in mode 24	Verify div B Rhic ring inh ON	Verify div B Rhic permit link disabled	Verify div B Rhic Inj. Inh ON	Reset all Systems & cycle BS cmd to OUT	Verify div A & B Rhic ring inh OFF	Verify div A & B Rhic permit link enabled	Verify div A & B Rhic Inj. inh OFF	Goto table 6 for div A fails
C112		□	□	□	□		□	□	□	
C113		□	□	□	□		□	□	□	
C114		□	□	□	□		□	□	□	

Table 5 – Division B Trip test in Mode 24

C'munk	Press & verify div A fails	Verify peer 17 divA goes to mode 2	Verify div A Rhic ring inh ON	Verify div A Rhic permit link disabled	Verify div A Rhic Inj. Inh ON	Reset all systms & place peer 17 div A & B in Mode 2	Place peer 7 in mode 24 & alarm stop	Verify pmry BS with-draw cmd is OUT	Verify div A & B Rhic ring inh OFF	Verify div A & B Rhic permit link enabled	Verify div A & B Rhic Inj. Inh OFF	Go to table 7 for div B fails
C112		□	□	□	□			□	□	□	□	
C113		□	□	□	□			□	□	□	□	
C114		□	□	□	□			□	□	□	□	

Table 6 – Division A Fails test in Mode 24

C'munk	Press & verify div B fails	Verify peer 17 divB goes to mode 2	Verify div B Rhic ring inh ON	Verify div B Rhic permit link disabled	Verify div B Rhic Inj. Inh ON	Reset all systms & place peer 17 div A & B in Mode 2	Place peer 7 in mode 24 & alarm stop	Verify pmry BS with-draw cmd is OUT	Verify div A & B Rhic ring inh OFF	Verify div A & B Rhic permit link enabled	Verify div A & B Rhic Inj. Inh OFF	See end of test instrns below
C112		□	□	□	□			□	□	□	□	
C113		□	□	□	□			□	□	□	□	
C114		□	□	□	□			□	□	□	□	

Table 7 – Division B Fails test in Mode 24

End of Test Instructions:

DETACH **Test Box** from **Chipmunk** after test
CONNECT **Cable to Chipmunk**
RESET Chipmunk **faults** at **MCR**
□ **VERIFY** **MCR** sees **Chipmunk** **OK**

ATTACH **Test Box** to next **Chipmunk** for test / or **end Chipmunk test**
START **Test sequence** at **Table 4**

□ **Check for acceptance of Chipmunk Tests in Mode 24**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/_____/_____